



Date: March 5, 1981  
To: J. G. Kaufman  
From: E. L. Cambridge  
Subject: Petroleum Pitch

As requested in your letter of February 13, 1981 the following are some thoughts on the question of petroleum pitch in general, and Dave Moran's report in particular. In making these comments, I am drawing heavily on results of extensive potline tests in both VSS and prebake potlines carried out by Alcan. A copy of their AIME paper is attached.

#### Prebakes

In general I would not anticipate major technological problems using petroleum pitch as a binder for prebake anodes. Because of the lack of quinoline insolubles (QI) and likely lower density, the binder demand with petroleum pitch should be less. Alcan's optimum figure was a 1.2% reduction in binder. Net anode consumption should not change significantly. I can not comment on the possibility of increased fuel consumption in the bake furnaces, but the anode voltage drop is likely to be higher because of a probable increase in electrical resistivity of the baked anode.

Overall, there is a good probability that petroleum pitch anodes would perform as well as coal tar pitch anodes, and the acknowledged environmental and hygiene advantages in the carbon plant would be realized.

#### VSS Soderberg

Alcan experienced operating problems with petroleum pitch anodes at Kitimat. Some detail is given in the attached paper. The fluidity control problems would be amplified with Sumitomo dry anode technology which requires a more stringent fluidity control of the anode top. As you know, a good anode is of paramount importance in VSS operations. On this basis, I would say there is a much lower probability of petroleum pitch usage at Columbia Falls. Nevertheless, the environmental and hygiene advantages would be attractive.


Summary

Potential environmental and hygiene advantages, economics and supply considerations suggest we should seriously consider usage of petroleum pitch. However, before we consider plant tests, I would suggest a thorough R & D evaluation of the pitches available to us as the particular pitch production process can result in markedly different properties.

Without going into detail, the R & D program should:

1. Establish a "desireable" petroleum pitch specification.
2. Select the pitch(s) most closely meeting the specification.
3. Conduct a laboratory evaluation of test electrodes made from candidate pitches.

Unfortunately, at present here in Tucson, we have neither the facilities nor personnel to carry out a program of this type. I do not know if the Harvey Technical Center could do the necessary work as I haven't yet had the opportunity to visit them. I plan to visit as soon as possible and will discuss with them the possibility of a lab program as outlined above.



E. L. CAMBRIDGE

ELC:pm

Enclosure

cc: F.N.Mudge - Louisville  
D.S.Moran - Sebree  
T.F.Payne - Columbia Falls  
File 3.1.5